THE ECONOMICS OF TOTAL WARFARE

By A. A. MAGNUS

The greater part of the population of our planet is at present living under conditions of total warfare. Every day they experience its consequences, yet probably few have reflected on what this means to the structure of economic thought. Dr. Magnus, whom our readers know from his contributions "Three Conceptions of Economics" (July 1942) and "Japan Finances the War" (October 1942), has in the following article tried to form a coherent theory of economics as they are emerging in total warfare in all participating countries. In doing this he has, for the sake of simplicity, concentrated entirely on the economic side, purposely omitting the implications of total war to be found in the spiritual or political spheres.—K.M.

MAN must be fed, housed, and clothed. For this purpose he must work and have the material with which to work. Work and material must be properly co-ordinated. Man co-ordinates them by budgeting. The study of how in the course of history man has shaped his budget and how in any given circumstances he can theoretically shape his budget, is the science of national economy or, if you prefer, social economy. Both these terms represent a wealth of thought and scientific dispute, which latter is entirely justified in view of the complexity of the subject matter. Without touching upon such controversies, we shall attempt to study the essential economics of total warfare.

Let us take an example of actual economics. The teacher performs work by passing on knowledge to the student. The student works in the afternoons in the office of a manufacturer of chemical fertilizers. In this way he completes his budget for his living expenses at the university, since the monthly allowance from his father, a manufacturer of bicycle lamps, is insufficient. The fertilizer factory supplies chemical fertilizers to the farmer. The farmer supplies wheat to the grain dealer. The grain dealer supplies it to the flour mill. The mill supplies flour to the baker. The baker supplies bread to the teacher. This is only one of the countless circles that go to make up economics.

DEMAND—THE DRIVING FORCE

The example just used shows the possible contributions of individual economic subjects according to their capabilities. But the transition from one step to the next is by no means hard and fast. The baker could just as well supply his bread only to soldiers, and the teacher would be left empty-handed. The links of the chain appear firmer when, instead of following the circle of supply, we follow that of demand. The teacher needs bread to be able to work. The baker needs flour to carry on his trade. The mill needs the grain, the farmer the fertilizer, the fertilizer factory the student, and the student the teacher. Thus demand, or the consumer, is the actual driving force of economics.

Now there are various ways in which the driving forces can be co-ordinated. The individual consumers can be independent in their budget and work and voluntarily co-ordinate themselves. For instance, the baker calculates that he has to supply so and so many loaves in order to be able to support his family out of the profits; at the same time he calculates how many loaves he would be able to sell as a result of his skill in organizing. The quantity of flour which he must obtain is somewhere between this minimum and maximum. This type of economics is called in theory "free commerce." It is actually an extreme, inasmuch as it represents the one extreme of

a variable quantity. For the degree of independence is variable. The individual may strive to be as independent as possible; but, because of the difficulties of human communal life, he will always be limited in one way or another by control on the part of the authorities.

BETWEEN TWO EXTREMES

In studying the possibilities of such control, we arrive at the other extreme of the various forms of economics, which we may call "centralized economics." In a centralized economy in its most extreme form, there is no room for independent budgeting. From the topmost organ of planning down to our baker, all economic activities run according to fixed rules. The baker has to buy so and so much flour and must deliver bread to so and so many customers. He must make a fixed profit which enables him to obtain fixed quantities of food, living quarters, and clothing to take care of the needs of his family budget.

Actually, however, the economic order in the various budgets within a nation is directed either more toward free commerce or toward centralized economics. In total warfare, the tendency is toward the latter; in peace time toward the former.

But before we go into this in more detail we must touch upon a technical question. How does the consumer distribute his requirements, and how does he obtain the fruits of his labors so that he can be a consumer? The fact that direct barter is possible has been shown at the peak of inflation times, when money had lost its function as a standard of values. This condition is hardly ideal, for very often it is impossible properly to divide the goods to be bartered. That which represents the standard of values and makes a proper division possible is in normal modern times money. Money is a means of communication, just like railways, shipping, teletype machines, and short-wave telephones. For steamers and trains to move, there must be steam in the boilers; for telephones and short-wave radios to function, they must be supplied with electric current. For money to be able to circulate, there must be a corresponding supply of goods wherever the currency is valid. In the same way, the functioning of all these means of communication is dependent on the existence of other technical appliances such as safety valves and fuses.

THE DEMANDS OF DEFENSE

So far we have limited ourselves to discussing the supply of goods of daily consumption. However, there also exists a second large circle of demand, equal in importance to the first one, arising from the fact that human beings are constantly threatened by each other. Hence they have combined into clans, tribes, nations, and still larger alliances. The size of these combinations depends on the technical development of the means of defense. Man can no longer provide alone for the necessary means of defending himself. The age of the stone ax is past, and since man has left the jungle and has taken up agriculture and cattle-raising he has been forced to rely on units larger than the family, in other words on the community.

The organization of defense has always been the state's most important task, and its political and economic organization is determined by the requirements of defense. Thus the feudal system of the European Middle Ages or of the Tokugawa Shogunate corresponded to the possibilities offered by those times for ensuring defense and feeding of the population. The mercenary system of Europe in the sixteenth and seventeenth centuries was closely connected with the invention of gunpowder and the mercantile system. In view of the improvement of the manufacture of arms, the next step was due chiefly to the capitalistic system of production, which permitted the manufacture of such quantities of arms that it was no longer possible to pay for enough mercenaries to carry them. The result was general conscription. The method of defense of a vast naval power makes possible still another form of economics.

The latest advancement of technology is characterized by the extension of the field of battle by another dimension, the air, and by the increase in the production of steel, which has enabled the large-scale employment of tanks. One might also summarize this advancement as the combustion-engine age of war. In this age, material plays a role of increasing importance, which in turn necessitates a growing number of laborers to produce this material. The consequence is that the laborer has been placed on an equal footing with the soldier as a combatant. This form of war was named "total war" by a military writer shortly after the Great War.

WAR AND EMPLOYMENT

Even in times of peace, the supply of consumers' goods is influenced by the safeguarding of the means of defense. How, then, is consumption affected by the burden of ensuring this defense?

We can deal with this question either from the viewpoint of the budget of the entire nation or from that of the individual budget of each member of the nation. The development of the budget of Japan from 1931 to 1942, which we have discussed in detail in our article "Japan Finances the War" appearing in the October 1942 issue of this magazine, furnishes an excellent example of the former, i.e., a national budget. Hence we shall proceed at once to the study of the effect of war and war preparations on the budget of the individual.

How does war affect employment? To return to our manufacturer of bicycle lamps: after the outbreak of war, he has adjusted his production to the manufacture of searchlights. Not only has he been able to keep most of his workers: he even employs three times as many as before. Where do the workers come from? From some metal works or other which hitherto produced for export and were not able to readjust themselves in time, or from workshops hitherto producing luxury goods. But is it so easy to obtain workers?

When war breaks out, war orders increase and yield profits which fall like spring rain onto the economic system of a country. Some of the profits are used to expand war-important plants; but others might be used, for instance, to purchase a hotel and to expand it. Our bicycle-lamp manufacturer will at any rate increase his son's allowance so that the latter will give up his job at the office of the fertilizer factory in order to devote himself entirely to his studies or to join the Army. The fertilizer factory in turn must look for a successor. While some of the workers are conscripted into the army and are thus eliminated from the process of production, the demand for labor rises. This situation might lead to difficulties if there were sufficient raw material to maintain full production. Most countries, however, are forced to curtail many processes if only because of a shortage of raw materials, which in turn releases workers. In England, for instance, there was considerable unemployment in 1939/40 for this very reason.

In view of the vast number of readjustments, it is difficult for the individual manufacturer to gain a clear idea of the labor market. Consequently, all producers in possession of raw materials try desperately to attract workers even at increased wages. Thus, in order to prevent production nonessential to war and to stabilize wages, even the most liberal country is obliged to take recourse to regulating the labor market. Germany had a considerable advantage over other countries in this respect, for she had already carried out a regulation of the labor market to combat unemployment, and this system could simply carry on. Moreover, all necessary preparations for the eventuality of war had been made, so that the outbidding of wages that occurred in America was impossible in Germany.

Japan was in this respect in a somewhat different position. She had had the advantage that, starting from 1937, she could very gradually adjust her peacetime industry to war requirements. The

export industry was already at a standstill and supplied the workers needed by the expanding armament industry. But even so there was a demand for labor, and wages gradually increased.

REVISED THEORIES

There is a psychological factor whose influence on the increasing demand for labor must not be underrated. Many social economists presuppose that man instinctively works at that place where, with equal conditions, he will earn the highest income. Hence they believe that, where more money can be made, more work will be done. There seems to be a different rule, however—chiefly in hot climates—something to the following effect. If a man can, as a result of increased wages, satisfy his regular requirements by working shorter hours, he has more free time to enjoy himself or to rest. Why, then, work more, or why go regularly to the factory, especially when there are less and less goods to be bought? To work hard in order to buy savings bonds is a rather remote idea for people who have little sense of time and are not much accustomed to thinking in terms of the future.

Let us digress here slightly. During the economic world crisis, the price of raw rubber dropped to one third of its level prior to 1929. The rubber market collapsed, and the Dutch East Indies studied the possibility of regulating production in order to stabilize the rubber price. The result was the following discrepancy. The plantation owners increased production when prices rose and curtailed production when prices fell. The natives, however, who tapped the rubber in the jungle increased production when prices fell, for that was the only way of obtaining the money they were accustomed to spending. On the other hand, they decreased production when prices rose.

The rubber plan had to be based on these contradictory attitudes. Both groups acted from selfish motives, but the problem was not to be solved by simply adjusting prices. Classic economic theory reckons with self-interest as with a natural force. It cannot be blamed for this, for it was faced by a plethora of economic observations and sought for some principle to explain human actions and to make them calculable. In the two hundred years since Adam Smith's time, doubts have arisen as to the general validity of self-interest as an explanatory principle. We do not know yet where the theory of "common interest goes before self-interest" may lead us as a new explanatory principle of correct national economy. But one thing is certain: with the present dense population of the earth and at the present level of technical knowledge, ungoverned self-interest leads to such disasters of overproduction that public interest, representing common interest, will always have to intervene.

To direct war economics by means of self-interest is a hopeless task, as soon as even a single opponent—such as now the Russians—work on another principle. It remains to be seen how long the United States will be able to organize employment on the basis of income. When the point is finally reached at which not enough people are prepared to work because money no longer attracts them, only such possibilities remain as the mobilization of moral forces or even compulsion.

EFFECTS OF TOTAL MOBILIZATION

At the beginning of 1943 a new phenomenon of total warfare made its appearance in Germany. Until then it had been sufficient to have war-essential workers on a combatant footing. Now, however, it became necessary to take people away from jobs which had hitherto been regarded as war-essential. Our baker, for example, who supplied the teacher, may have had a comparatively old-fashioned bakery where much of the work was done by hand. During the period of unemployment this had actually been an advantage; but now the baker had to close down, and the teacher's bread was supplied by a huge bread factory where everything is mechanized.

The baker is now employed in an ammunition factory or in an airplane-assembly plant, while his former employees are now soldiers.

How is the problem of wages handled in this case? Many, many small factory owners, tradesmen, and artisans all over the world are sacrificing their independence and becoming wage or salary earners. The sole compensation offered them for the lowering of their social standing—quite apart from their lower income—is the promise of postwar restitution of their former position. It is here that we once again come up against the spiritual attitude. Modern war demands from the working individual sacrifices which go far beyond anything known during the wars of the last hundred years. We shall see later that the compensation for work may scarcely surpass the minimum requirements for maintaining the strength necessary for work. Hence it is nothing but moral forces which determine the quantity and quality of production. This is one of the strong points of such nations as Germany and Japan and a notable weakness of the United States.

BRAINS REPLACE RAW MATERIAL

The degree of personal obligation and the centralization of labor control are greater than during the first world war and may be regarded as especially characteristic of total war. In contrast to this, the nationalization of raw materials is nothing new. The confiscation of foodstuffs is an age-old characteristic of war, and the requisitioning of raw materials is known to us from the Great War, although better preparation and administration are typical of total war. Of course, those countries hitherto poor in raw materials have a head start, because this lack forced them to budget and allowed them to accumulate administrative experience.

Thus the question of raw materials turns out to be a question of human quality: what is needed is talent for organization, inventive power, reliability, and adaptability. Without these, the raw-material wealth of America, of southeastern Asia, or of Russia is worthless. We might even go so far as to say that modern war no longer deserves the term of "war of raw material." Every child knows that a lot of raw material is required. The possibilities of obtaining the raw material, however, are, as a result of the progress of chemistry, less dependent on geography than formerly and have increased to such an extent that man once again occupies the foreground. A shortage of natural mineral oil is no more of a disaster to the Axis powers than is the shortage of natural rubber to the Americans. Invent, invent—that is the modern problem of material.

REVERSED TREND

The fact that the question of material has changed in appearance was already to be seen in the period of peace between the two world wars. At that time the problems of overproduction appeared probably for the first time in the history of mankind with such gravity. One need only recall the overproduction of shoes in the United States which went far beyond any possible consumption. Here, in the case of too much, the same urge for government control arose as in the case of too little in the Great War. The art of government control is in the process of becoming a science of its own, whose chief problem is the proper utilization of free initiative. If the human forces hiding behind self-interest in the shape of personal talent, personal ambition, ambition for one's family, are eliminated, then the economy of a nation is robbed of incalculable assets.

In Germany a tendency has been discernible since 1942 to revert control from the state to economic groups. These groups are given free rein to use their expert knowledge of conditions to guarantee certain quotas of production. A similar trend has been noticeable in Japan, too, since the beginning of 1943. Here the main controlling bodies have in some cases been accorded supreme authority, as, for instance, in the distribution of railway discounts by the mining-control body, or in deciding over applications of one factory for the use of patents belong-

ing to another in the interest of national defense.

The question of material has retreated behind the question of human qualities, one of which is also the art of directing communications. But the question of material is independent of the problem of financing, to which we shall now turn.

WHAT IS NATIONAL INCOME?

While the procuring of raw material is a technical problem which by far outweighs the question of cost, the procuring of money in a modern war is no longer a technical but an economic problem. The experiences of the Great War have taught us that the question of cost in this case is a very important one. In other words, the procuring of money must not become too expensive to the state.

In order to make the importance of this decisive point clear, we shall have to discuss national income as such. Assuming that the country has a national income of say 50 billion dollars in a given year, what does this national income represent? Naturally, we must oversimplify the picture. We shall start with the production of the individual worker. He produces something that represents a certain value in money, as pointed out earlier in this article. The value of an hour of his working time depends on the goods he produces. If the labor of an entire national economy is effectively employed, the value of the goods produced by an hour of work is high; in the case of inefficient organization it is low. The intelligence of the engineer and the merchant is the multiplicator for the laborer's working hour. If we assume the value of the product of one working hour to be say one dollar, a 10-hour working day would represent 10 dollars and 25 working days a month 250 dollars. Part of this amount goes to the worker as wages; the rest is distributed over raw material, technical and business management, organization, and interest.

The quantity of available working hours is the fundamental item in calculating a national income. To continue with oversimplified figures: if in our country X there are 10 million industrial workers, 3,000 working hours per annum per worker would give us 30 billion working hours. If the working hour yields one dollar, the share of industry in the national income amounts to 30 billion dollars. The remaining 20 billion dollars are produced by agriculture. This figure is lower although the number of workers employed is larger than in industry, for the yield of each working hour is smaller. The distribution of the work over the year is unfavorable, and the number of working hours in agriculture comparatively low. All this is, of course, only a very rough approximation; for in our calculation the work of the family, especially of the housewife, cannot be taken into account.

THREATENED STABILITY

In calculating the national income, we assume that in the course of the whole year the one dollar will always have the same value. Now we must ask: what are the conditions under which this value remains constant? The theory of money teaches us that the value of money, or rather of the monetary unit—regardless of whether it is of gold or paper—depends on the relationship between the total quantity of goods and the total quantity of money within the territory in which the currency is valid. Thus, in order to retain the stability of the currency, the relationship between the quantity of goods and the quantity of money must be kept stable. To return to our example: one dollar retains its value if, with a national income of 50 billion dollars, there are also 50 billion dollars' worth of goods produced in that year.

Although in war time these 50 billion dollars are actually earned and the goods also produced, the people are not able to buy 50 billion dollars' worth of goods. What could I do with one of the searchlights produced by our bicycle-lamp manufacturer, even if I were able to buy it? Thus we are faced by the situation that, although 50 billion dollars are earned, say 20 billion dollars' worth

of the goods produced cannot be bought. As a result, the purchasing power of these unemployed 20 billion dollars scrambles for the remaining purchasable goods to the value of 30 billion dollars. Thus the equilibrium is disturbed: 50 billion dollars purchasing power, and only 30 billion dollars' worth of goods. On top of all this, the quantity of goods is even more restricted by the above-mentioned regulation of the supply of raw material. The 50 billion dollars of income exert a terrific pressure on the value of the few purchasable goods and force up prices. This is *the* problem of war financing, which applies with equal ruthlessness to all countries.

REMOVING SURPLUS PURCHASING POWER

In attempting to remove this pressure, the authorities speak of "skimming off purchasing power." There are only two possible ways: either an immediate removal of this surplus of purchasing power, or the diverting of this purchasing power into a canal leading into the future. The first consists of taxes, the second of loans. Taxes radically remove purchasing power. They demand from the worker the clear realization: I work, but I cannot buy goods for my own requirements from my pay; instead I buy arms and donate them to my country. Because of England's extreme clearness of thought in monetary matters, this country was able during the Great War to levy taxes from its citizens which covered 50 per cent of the cost of the war. In Germany it was only possible to cover 25 per cent. In the present war, National-Socialism has succeeded in almost achieving England's rate. Indeed, in some cases it was possible to finance even more than 50 per cent of the war costs by taxation.

If taxes are raised beyond this level, the present limit to human willingness for sacrifice is apparently exceeded. The individual always needs certain reserves of money beyond the bare requirements of existence. Hence the governments say to their subjects: "Give us the other 50 per cent we require for financing the war on credit; we will pay you back the money in 12 or 15 or 17 years. After the war we shall see to it that it will not be you who will have to provide for the interest on this money by taxes but that the beaten enemy will pay this interest. Thus it is in your own financial interest to win the war."

WAR LOANS AND THEIR DANGERS

There are many different types of propaganda for these loans and many different facilities; but the meaning, from an economic point of view, is always the same: burdening the future. It is important to keep this burden as light as possible. There are three dangers to be considered here:

(1) Nonpayment of taxes and loans.

(2) Granting of excessive prices for armaments on the part of the state.

(3) Competition in the construction of new plants.

(1) If the individual does not pay taxes or take out loans but remains in the market with his money, he increases the pressure of the quantity of money on the limited quantity of goods. Through many thousands of minute channels the general price level is then raised. This rise can only be postponed, but not done away with, by the subsidizing of productions whose cost is rising. As a result of the increase in prices, the inherent value of the loans so far subscribed sinks, which does not encourage the subscriber. The situation of those who have a firm income worsens, and finally wages are forced upward. The following year the national income has increased, for the yield of one working hour has risen from one dollar to one dollar twenty. Perhaps part of this increase represents real goods; but the major part is only the inflated monetary expression of an unchanged production.

In the latter case, the whole picture of economics that can be expressed in money becomes more and more distorted. Rents remain unchanged, bread and rice remain cheap; but all other prices that cannot be fixed are increased. Of course,

there is no difference in the way a cannon shoots whether it has cost 100,000 dollars or 120,000 dollars. Production is absolutely unaffected by questions of money: labor and material are on an entirely different plane in a total war. The price figures only take on importance at the time of demobilization—but, after all, it is for postwar times that war is being waged. For that reason we shall have later on to go into the time after the war.

It might be suggested that, if it is a matter of keeping only so much money in circulation as corresponds to the value of available purchasable goods, the government could force people to subscribe to loans. The result of such a measure, however, is usually a devaluation of the loans. The appeal to the individual's sense of duty, even in the form of moral pressure, has proved more favorable to the market value of the loans, whose transferability can, moreover, be slightly reduced by compulsory registration of large transfers.

INTERNAL COMPETITION

(2) The danger that the value of each working hour be inflated can be prevented by seeing to it that the state does not pay too much for its armament supplies. For this reason the price calculation for government orders is subject everywhere to strict control. But as there is usually an urgent demand on all sides, so that supplies are always slightly behind the demand, the individual officer placing an order may sometimes grant higher prices in order to get an earlier delivery, perhaps earlier than one of his colleagues. Thanks to her political leadership, Germany has achieved an unprecedentedly low quota of increase in prices.

(3) Money is required for the payment of taxes and for subscribing to loans; but the money market houses yet a third guest. Side by side with the state stands the entrepreneur, who does not manufacture war material but builds plants in which war material can be produced. Thus, in addition to the 20 billion dollars required for war-material production, our country has also to provide a large amount, say 5 billion dollars, for expanding its industrial capacity, so that actually a total amount of 25 billion dollars must be provided by the population through savings.

SAVINGS AND PRIVATIONS

A huge savings program of this kind cannot be carried out without organization. The state must unite all banks and financial organizations into a finance-control body and exert a planned control of investments in industrial expansion and national loans. So we see that, side by side with control of the labor market and of raw-material supplies, there must in total war necessarily also be control of investments. Germany has been a pioneer in all such matters and is ahead of other countries in experience.

In our country X, 25 billion dollars are thus diverted—skimmed off from the national income of 50 billion dollars, and prices should remain stable if the remaining purchasing power of 25 billion dollars were balanced by available goods of the same value. One might say that, with 25 billion dollars for consumption out of 50 billion dollars income, the individual would be able to consume 50 per cent of his earnings. But this is not true, for he must pay additional taxes which the state requires for other than armament expenditure and which must be deducted from this 50 per cent. Although the small consumer does not have to bear the same proportion of taxes and loans as the armaments manufacturer and his employees, total war does not leave him much more for his individual consumption than what is absolutely necessary for maintaining existence—neither in Germany nor Japan, neither in Russia nor England. Beside this bare maintenance of existence, the reward for his work is the knowledge of having done everything humanly possible for the future of his children.

POSTWAR PROBLEMS

After the war, the country will have a vast heavy industry, airplane, shipbuild-

ing, and automobile industry, machine factories, and plants for the manufacture of substitutes. They cannot be left to themselves. A central, organizing hand must guide their adjustment to the manufacture of consumers' goods. The soldiers, too, must be employed in such jobs as are most urgently required for reconstruction and for which the necessary raw material is available. Thus centralized economics brought about by total war will not disappear so rapidly. Without the necessary guidance, many armament firms would collapse. The prices for all war-essential goods would drop, and this would be compensated only for a short time by a great demand for consumers' goods, which would therefore soar in price. This boom would soon die down, and then the problem would be to prevent the general price level from sinking. For if it sinks, the burden of the war loans gains correspondingly in weight.

Of course, that country can most easily avoid price collapses which has prevented prices from rising during the war. After the Great War, it was one of the chronic ailments of all participating countries that the war loans, which had been subscribed with money of very low purchasing power, suddenly represented double or treble their former value in purchasing power. The interest on 100 billions in any currency can easily be paid if the national budget amounts to 30 billions; at 3 per cent the interest amounts to 3 billions, i.e., little more than 10 per cent of the budget. But the same interest becomes an intolerable nightmare when the budget drops to 10 billions as a result of the general decline in prices and 33 per cent of the budget now has to go to the payment of interest. Even England, with all her financial acumen, was unable after 1918 to find a feasible way of reducing this burden, and the path of hesitation finally led to devaluation.

Now comes the final astounding conclusion: that country which emerges from the war with the smallest amount of war loans round its neck has, from an economic point of view, been most successful. For, no matter what shape its currency takes on, its budget remains least burdened of all, and its funds can serve other purposes, whether it be the providing of employment, the furthering of foreign trade, or the carrying out of cultural tasks. A country with heavy national debts easily gets caught in the mill of devaluations in which France, for instance, gambled away her war gains of 1914/18 by a stupid financial policy. America, too, is still acting thoughtlessly. The great race for a sound financial policy with regard to the future is being run between Germany and England, and Germany with her scarcely increased price level is well in the lead.

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Let us summarize the characteristics of the economics of total warfare :

The economic organization represents a centrally guided economy to an unprecedented extent. A reversed trend is already discernible in that the governments are once again resorting to the sense of duty of private business groups.

Labor is not only regulated as a market but has become a national duty in the public interest. In addition to this, labor has been rationalized to such an extent that plants of a low degree of effectiveness are being shut down in favor of those with a higher one. As a result of technical developments, the question of quantity has become one of quality.

Financing is no longer a technical question, as can be seen from the disappearance of the gold problem. (Not only Japan is closing down her gold mines but also America.) The quantity of money is no longer a problem: it is only a question of employing money economically.